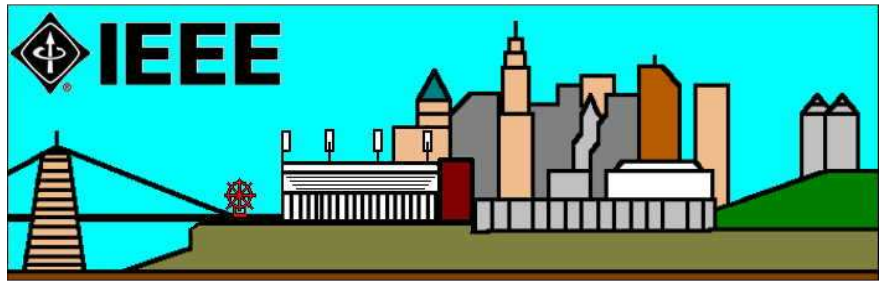


**IEEE CINCINNATI
SECTION
NEWSLETTER
FEBRUARY 2008**



FEBRUARY MEETING
MAKING SENSE OF GLOBAL WARMING

DATE: Thursday, February 28, 2008
PLACE : Raffel's – 10160 Reading Road (see below for directions)
TIME : 5:30 p.m. to 6:00 p.m. - Social Time
6:00 p.m. to 7:00 p.m. - Dinner
7:00 p.m. to 8:30 p.m. - Presentation

COST FOR DINNER: \$10.00 per person – REGARDLESS OF MEMBERSHIP OR MEMBERSHIP GRADE!

NOTE: DINNERS ARE ALWAYS OPTIONAL - YOU MAY ATTEND THE PROGRAM ONLY.

MENU SELECTIONS: Boneless Chicken Breast Marsala, Salisbury Steak, Baked Ham with Pineapples, Homemade Macaroni and Cheese, Scalloped Potatoes, Seasoned Green Beans, Tossed Salad Dinner Rolls, Assorted Fruit Pies, Coffee, Tea, Iced Tea, Soft Drinks. There is also a bar available for the purchase of alcoholic drinks.

LOCATION: Raffel's is located at 10160 Reading Road, south of Glendale-Milford Road on the east side of Reading. Take I-75 to the Glendale-Milford Rd. Exit, go east on Glendale-Milford Road approximately $\frac{3}{4}$ of a mile to Reading Rd. and turn right on Reading.

RESERVATIONS: Please email Fred Nadeau for reservations at <mailto:fnadeau1@earthlink.net> (preferred) or call the Section Voice Mail at 513-629-9380 by **Noon, Tuesday, Feb. 26, 2008** if you plan to attend. Please leave your Name, IEEE Member Number, and a daytime telephone number.

PE CREDITS: Depending on the subject matter, attendance at IEEE Cincinnati Section Meetings now qualifies the attendee for Professional Development Hours towards renewal of Professional Engineers Licenses. Required documentation will be available following the meeting! The Section Meetings also provide a great opportunity to network with fellow engineers in the area.

ABOUT THE MEETING: The presentation, which will be given by Prof. Wolf Roder of U. C., will introduce the concept of climate as distinct from weather, and how it is measured. He will:

- discuss the energy we receive from the sun, what happens to it in the atmosphere, the ocean, and the land surface and how that energy is returned to space;
- define what is meant by the “greenhouse” effect, and why this is a misnomer;
- look at the evidence for global warming and perhaps mention some of the reasonable objections to the theory.

He will attempt to be very clear about what is known because it can be measured, what is inferred from the measurements, and what he fears may happen in the future.

ABOUT THE SPEAKER: Wolf Roder is a retired Professor of Geography Emeritus at the University of Cincinnati. He taught introduction to weather and climate, a part of physical geography, for some 20 years. Thus, he followed most of the changes in research on climate and global warming.

CHAIR'S MESSAGE

by Brian Resnick, Section Chair

We kicked off 2008 with a great, high-attendance meeting. Many thanks to Paul Ritchie of Ethicon Endo-Surgery for an excellent presentation on his experiences with off-shore outsourcing. Lots of good discussion.

Also, we had many new faces, including EMBS members and students. It was a very enjoyable evening; please spread the word, and keep coming back.

Next up is Engineer's Week (FEB 17-23) and our Family Day Robot activity for you and your kids (grandkids, neighbors, whomever). Grab a kid, and get them excited about engineering.

Our February 28 meeting will feature the hot topic of Global Warming.

As always, please consider elevating your membership level to Senior Member. It does not cost you anything (except a few minutes of your time) and it helps out the Section. You receive a nice plaque and \$25 towards IEEE items. NOTE: Seniors are not old, just active in engineering for at least 10 years. Contact an officer at the next meeting for assistance in becoming a Senior Member.

MEMBERSHIP NEWS

NEW MEMBERS

The following individuals are IEEE members who are new to our Section:

Joshua Neil Allen	Michael Jordan	David Ratz
Benny Baker	Mrityunjay Kant	Norman Redlich
James Brown	Alicia M. Klinefelter	John Smith Reichart III
Chopper A. Eckhoff	Glen Thomas Knox	Heather Glenn Rock
Michael D. Filsinger	Wayne E. Merkley	Albert M. Stem
Shawn Goodwin	Andrew Mollmann	Svetlana Strunjas
Charles M. Hall	Skip Moore	Daniel J. Teegarden
C. W. Hibscher	Jason Nemeth	Nicholas R. Ustick
Joshua J. Hoffman	Brandon Phillips	Edward V. Weimer

We wish to welcome these new members to the Cincinnati Section!!!

Family Day LEGO Robot Workshop – February 23

As part of our celebration of Engineer's Week, the Cincinnati Section is sponsoring a family activity on Saturday February 23 in which you and your child will build and program a LEGO robot, and optionally participate in a friendly competition. It was great fun last year, and is a super way to inspire your child.

In 2006, the Cincinnati Section purchased twelve LEGO robot kits to help with K-12 educational activities. The Executive Committee thought it would be a nice idea to let the members and their families play with the robots. Because of that desire, we invite you and your child to attend a robot workshop on February 23, 2008 at the College of Applied Science (2220 Victory Parkway).

During the morning session, you will build a robot per predefined plans, and then with a very cool, easy to learn, drop-and-drag language, and step-by-step instructions, you will program the robot to move and respond to sensors. After lunch, you have an opportunity to be creative. You will have about two hours to modify your robot (program and structure) and prepare it for a friendly competition that involves pushing soda pop cans around. The workshop runs from 8:30 to about 3:30. If you cannot stay the whole day, it is okay to attend just the morning session.

The LEGO kits state that the age appropriateness is 8 and older. Teenagers like it too. Since, you, the engineer, will be present to help, and since you know your child, we will leave it up to you. Warning: the parts are very small and present a choking hazard for toddlers.

Attendance is limited to twelve families. Reservations are via email and taken on a first-come-first-served basis. Please contact Brian Resnick (Brian.Resnick@ieee.org) to register.

Scanning the Past: A History of Electrical Engineering from the Past

Submitted by Bob Morrison, Editor

Copyright 1991 IEEE. Reprinted with permission from the IEEE publication, "Scanning the Past" which covers a reprint of an article appearing in the Proceedings of the IEEE Vol. 79, No.6, June 1991.

Leonard F. Fuller and Naval Radio in 1916

The June 1916 issue of the PROCEEDINGS OF THE IRE (Institute of Radio Engineers) included a brief contribution on the reception of continuous wave signals by a brilliant young electrical engineer, Leonard F. Fuller. The same issue contained a paper by Louis W. Austin, head of the U. S. Naval Radio Laboratory, reporting on radio propagation experiments at the naval radio station at Darien in the Panama Canal Zone. The two papers were not unrelated since Fuller was the chief electrical engineer of the Federal Telegraph Company, which had recently constructed a 100 kW Poulsen-arc transmitter for the Darien station. In 1916, the Navy was in the process of installing high-power arc converters designed by Fuller at strategic locations around the world.

Fuller was born in Portland, Oregon, in 1890 and graduated in engineering from Cornell University in 1912, having constructed a Poulsen-arc transmitter as a senior thesis project. In September 1912, he joined the Federal Company located in Palo Alto, California, and, despite his youth, was appointed chief electrical engineer the following year. He immediately confronted the challenging assignment of filling Navy contracts for 100 kW arc converters. The Federal Company had acquired the American rights to the oscillating arc converter from the Danish scientist, Valdemar Poulsen, in 1909. Cyril F. Elwell, Fuller's predecessor as chief electrical engineer at Federal, had designed arc converters with a power of 30 kW but had failed in an effort to construct a 60-kW unit. Fuller initiated and led an intensive research effort at Federal that produced a deeper understanding of the arc converter and the design information needed to construct the higher power units demanded by the Navy. For example, he found that there was an optimum magnetic field for each set of operating conditions and that the magnitude of alternating current should equal the direct current for optimum conversion efficiency. A strong magnetic field was required to extinguish the arc once each cycle of the high-frequency output current.

The success of the Darien 100-kW transmitter led to Navy contracts for arc converters of even greater power. During 1917, a 200-kW arc unit was installed at a Navy station in San Diego, California, and 500 kW arcs were installed at Pearl Harbor, Hawaii, at Cavite in the Philippines, and at Annapolis, Maryland. Early in 1918, Federal signed a contract to supply a 1000 kW arc converter to be located near Bordeaux in France. The 500 kW converters weighed about 60 tons, while the 1000-kW unit weighed about 85 tons. In physical appearance these machines resembled large turboelectric generators, although they had no rotating parts and were quite rugged and durable. Federal also supplied the Navy with smaller arc sets suitable for use on ships. By 1918 the Navy

operated a network of high-power arc transmitters that enabled immediate communication with its ships in the Atlantic, Pacific, and Caribbean.

This case history of developments three quarters of a century ago relates to several themes in contemporary history of technology. The acquisition of the Poulsen arc invention by Federal is an example of technology transfer from Europe to America that would be repeated, for example, by the transfer of the resonant-cavity magnetron to the United States in 1940. The history of the arc converter during the first World War is a good example of what historians now call "military enterprise." Military communication needs and prescribed technical specifications stimulated development of continuous-wave radio in general and the high-power arc oscillator in particular. Pressure from the Navy forced Fuller and his assistants at Federal to generate a body of engineering science as applied to arc converters when the existing technical literature proved inadequate for the design of converters of more than 30 kW power capability. Historians of technology recently have stressed distinctions between science and engineering and related distinctions among types of knowledge such as basic science, engineering science, and engineering design.

Leonard Fuller earned his doctoral degree from Stanford University in 1919 and left Federal the same year. He went on to enjoy a successful career as a consulting engineer with several companies. He also held academic positions at the University of California and Stanford. The IRE awarded him the Morris N. Liebman award in 1919 for his research on the high-power arc converter, and he became an IRE Fellow in 1925. He died in 1987 at the age of 96.

*James E. Brittain
School of History , Technology and Society
Georgia Institute of Technology*

IEEE NEWS

IEEE Life Fellow Becomes IEEE-USA President, Will Work to Enhance U.S. Innovation and Competitiveness

WASHINGTON (21 January 2008) -- IEEE-USA will continue working to increase federal investment in basic research and bolster U.S. innovation and competitiveness in 2008, according to IEEE Life Fellow Dr. Russell Lefevre, who became IEEE-USA president on New Year's Day.

"Our overarching goal is to keep the United States the most technologically advanced nation on earth," Lefevre said. "By increasing our nation's investment in high-tech research and development (R&D), we can help bring good, high-paying jobs to the United States. That's why we support and advance programs that foster innovation and unleash the U.S. entrepreneurial spirit."

Lefevre, who lives in Redondo Beach, Calif., succeeded John Meredith of Colorado Springs, Colo. Meredith will serve as IEEE-USA's past president in 2008. Dr. Gordon Day of Boulder, Colo., is the organization's president-elect.

In addition to a greater R&D investment and programs that promote innovation, Lefevre said IEEE-USA in 2008 will focus on supporting K-12 math and science education to encourage technical literacy and train future technologists; provide serious, career-long continuing education to maintain a competitive U.S. workforce and preserve careers; and offer increased member value in products and services.

For more details, see Lefevre's first president's column at

As chair of the IEEE Technical Activities Board New Technology Directions Committee, Lefevre has been instrumental in promoting emerging technologies. The committee joined IEEE-USA last year in co-sponsoring symposia on homeland security, plug-in hybrid electric vehicles, Internet-based medical information and radio frequency identification (RFID). IEEE RFID 2008 will convene in Las Vegas in April, and the 2008 IEEE International Conference on Technologies for Homeland Security in May.

IEEE-USA is in year three of its strategic plan to help the United States become more competitive in the face of global competition. Lefevre said the association will lobby Congress to fully fund the America Competes Act it authorized last year. IEEE-USA will also continue to work with industry and labor groups to press Congress to reform high-tech immigration.

The IEEE-USA Innovation Institute, which began last year, will continue to promote innovation through training and mentoring tomorrow's technology leaders. See <http://www.innovation-institute.org/>.

Lefevre became attuned to the inner workings of the federal government when he served an IEEE-USA 2001 congressional fellowship as Sen. Jay Rockefeller's (D-W.Va.) science adviser. Lefevre's work included leading the Senate effort to establish the National Science Foundation's (NSF) Math and Science Partnership Program, which is designed to make significant improvement in K-12 math and science education. He was personally responsible for inclusion of NSF's Noyce Teacher Scholarship Program, which strives to encourage science, technology, engineering and math majors and professionals to become K-12 science and math teachers. Both NSF programs are slated for significant funding increases in the America Competes Act.

Lefevre is a former vice chair of the IEEE-USA Transportation & Aerospace Policy Committee and served as IEEE-USA's vice president for technology policy from 2004-07. He has helped to select the organization's government fellows since 2003.

A native of Grafton, N.D., Lefevre first joined the IEEE in 1963. He has served on numerous IEEE committees and boards and was president of the IEEE Aerospace and Electronic Systems Society in 2002-03. He is also a member of the IEEE Computer Society, Communications Society, Geoscience and Remote Sensing Society and the Lasers and Electro-Optics Society. He received an IEEE Millennium Medal in 2000 for outstanding contributions to the IEEE, and was elevated to Fellow in 2004.

Lefevre has more than 30 years of experience as a radar system engineer. He was the lead engineer for the first Navy airborne multi-mode radar while working for Hughes Aircraft Co. At Technology Service Corp., his activities included identifying advanced technologies, performing R&D on promising new applications, developing business opportunities and strategies, and organizing proposal activities. He was largely responsible for receiving more than 80 Small Business Innovation Research Program awards.

Lefevre holds a B.S. and M.S. in physics from the University of North Dakota. He earned his Ph.D. in electrical engineering from the University of California, Santa Barbara. He received an honorary Doctor of Letters from the University of North Dakota last May.

Lefevre and his wife, Carole, have three children – Peter, Mary and Kristen – and six grandchildren.

**IEEE-USA Commends President for Asking Congress to
Double Federal Support for Critical Basic Research**

WASHINGTON (29 January 2008)-- IEEE-USA President Russ Lefevre commends President George W. Bush for asking "Congress to double federal support for critical basic research in the physical sciences" in his State of the Union address last night.

"We appreciate the president reminding Congress how paramount funding into basic research is to keeping the United States the world's technology leader," IEEE-USA President Russ Lefevre said. "Much of our nation's economic growth over the past 50 years can be attributed to the fruits of research by scientists and engineers."

President Bush also referred to the America Competes Act authorization bill that he signed into law last August, but was not fully funded by Congress. The bill supports many of the same initiatives he outlined in his January 2006 American Competitiveness Initiative (ACI). See <http://www.whitehouse.gov/stateoftheunion/2006/aci/>

Here are President Bush's remarks:

"To keep America competitive into the future, we must trust in the skill of our scientists and engineers and empower them to pursue the breakthroughs of tomorrow.

"Last year, Congress passed legislation supporting the American Competitiveness Initiative, but never followed through with the funding. This funding is essential to keeping our scientific edge.

"So I ask Congress to double federal support for critical basic research in the physical sciences and ensure America remains the most dynamic nation on earth."

Both the ACI and the America Competes Act call for a doubling of federal funding at the National Science Foundation (NSF), the Department of Energy Office of Science and the National Institute of Standards and Technology labs.

The America Competes Act also includes significant funding increases for NSF's Math and Science Partnership Program and the Noyce Teacher Scholarship Program. The former is designed to make significant improvement in K-12 math and science education, while the latter strives to encourage science, technology, engineering and math majors and professionals to become K-12 science and math teachers.

While serving a 2001 IEEE-USA congressional fellowship as Sen. Jay Rockefeller's (D-W.Va.) science adviser, Lefevre led the Senate effort to establish the Math and Science Partnership Program and was personally responsible for inclusion of the Noyce Teacher Scholarship Program.

"The America Competes Act has the potential to play a critical role in our nation's economic and technological future," Lefevre said. "We will continue to lobby Congress to provide full funding for this important legislation."

2008 Public-Awareness Program Launched to Bolster Image of Engineers, Engineering

WASHINGTON (22 January 2008) -- As part of its long-term, ongoing effort to improve the public's understanding and appreciation of engineering, IEEE-USA has launched its 2008 public-awareness program that reaches out to youngsters, adults and the public-at-large through a variety of media targeted to specific audiences. The IEEE-USA Board has approved \$72,000 in support of special public-awareness projects, plus \$40,000 in related public-relations expenses for a total of \$112,000 dedicated to bolstering the image of engineers and engineering in 2008. The public-awareness program includes six components:

-- Adding IEEE technologies to TV engineering news spots developed through the American Institute of Physics (AIP) "Discoveries & Breakthroughs" syndication service of 12 monthly reports in English and Spanish distributed to more than 100 U.S. TV stations (for details, see <http://www.aip.org/dbis/IEEE/>)

-- Helping print and broadcast journalists communicate authoritatively to the public about engineering and science through the placement of two IEEE-USA Engineering Mass Media Fellows in media outlets as part of the AAAS program (for details, see <http://www.ieeeusa.org/communications/massmedia.asp>)

-- Recognizing journalists for furthering the public's understanding of the engineering profession with two \$1,500 honorariums (for details, see <http://www.ieeeusa.org/volunteers/awards/award8.html>)

-- Demonstrating engineering support for community activities and reaching Washington opinion leaders through promotional announcements on the U.S. capital's only classical music station, WETA-FM at <http://www.weta.org/>

-- Launching an online engineering video competition for undergraduates on "How Engineers Make a World of Difference" with \$10,000 available in scholarship awards to be announced during Engineers Week from 17-23 February (for details, go to http://www.ieeeusa.org/communications/video_competition/)

-- Introducing youngsters to basic engineering concepts and communicating engineers' support for local community activities through the National Engineers Week 2008 Discover Engineering Family Day to be held at the National Building Museum in Washington, D.C. on 16 February (for details, see <http://eweekdcfamilyday.org/>)

Improving the public's understanding and appreciation of engineering continues to be a top priority for U.S. IEEE members. IEEE-USA has been actively involved in promoting public awareness of engineers and engineering for more than 25 years.

For more information on IEEE-USA's public-awareness program, a brochure can be viewed and downloaded at <http://www.ieeeusa.org/communications/files/PABrochure.pdf>.

IEEE-BACKED 'DESIGN SQUAD' TO BE FEATURED ON 'JEOPARDY!' TV GAME SHOW

WASHINGTON (22 January 2008) -- On Monday, 18 February, the long running television program "Jeopardy!" will feature a category devoted entirely to "Design Squad," the reality television show for youngsters funded by the IEEE and other groups, as part of "Jeopardy's" Teen Tournament Week. Footage from "Design Squad's" first season will be used to test contestants' knowledge of basic engineering concepts through a series of questions co-developed by "Design Squad" and "Jeopardy!" producers. Host Alex Trebek will introduce the category and encourage viewers to find the program on PBS. The "Design Squad" logo will also be featured as the category header.

The air date of the "Design Squad" episode is timed to coincide with National Engineers Week which takes place 17-23 February. The Teen Tournament series is one of "Jeopardy's" top-rated programs each year. NBC's "Jeopardy!" has an average daily viewership of 12,000,000.

"Design Squad" will begin its second season on PBS this April. The IEEE is continuing its second year of funding support for the program that features two teams of high-school students led by two young professional engineers who compete to solve a new engineering challenge each week. The program also incorporates educational materials distributed in local communities activities and on a Web site.

Market research provided by WGBH, which produces the program, has shown that 10- and 11-year-olds who watch "Design Squad" have increased their understanding of the design process, reconsidered stereotypes about engineering, and know more about engineering and science concepts. To view past and current episodes, go to <http://pbskids.org/designsquad/>.

The IEEE Cincinnati Section Executive Committee **Member Names and Phone Numbers**

Cincinnati Section Voice Mail	513-629-9380 (call for meeting reservations)
Section Web Page	http://www.ieeecincinnati.org
Brian J. Resnick - Chair	513-556-4244 (Office), 513-759-5367 (Fax), Brian.Resnick@ieee.org
Randy Restle - Vice Chair	513-459-3484, rrestle@ieee.org
Laurie Tappel - Treasurer	513-397-6383, laurie.tappel@cinbell.com
Ron Harbaugh - Secretary	513-769-3781, ron.harbaugh@ieee.org
Fred Nadeau - Arrangements Chair	f.nadeau@ieee.org
Marc A. Bell - Member-At-Large	513-287-2452, marc.bell@ieee.org
Charlie Nash – Webmaster; Member-At-Large	513-723-3849, cnash@ieee.org
Frank Zhou – Membership	513-556-6552 (Office), xuefu.zhou@uc.edu
David Pettigrew - EMBS Chapter Chair	513-558-3596 (Office), pettigdb@email.uc.edu
Bob Morrison - Newsletter Editor	513-287-3697 (Office), 513-287-4493 (Fax), j.r.morrison@ieee.org